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PALLET STRAIGHTENER

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(71) Applicant(s)
GORDON TAYLOR

(72) Inventor(s)
GORDON TAYLOR

(74) Attorney or Agent
P.N. NICHOLS

(56) Prior Art Documents
EP 69503

(57) Claim

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1. A pallet handling device for receiving and straightening a stack of pallets or similar flat, substantially rigid objects substantially congruent in plan, comprising a generally rectangular frame or structure of plan section substantially corresponding to that of the pallet, the device having a back and two side walls, at least one of the latter being hinged for outward swinging movement from a normal position to define with the other wall an open mouth of variable rearward convergence, said walls being effective, vis-a-vis the stack, to push awry pallets into alignment with others and thereby to straighten the stack, as herein defined.

Application for a Patent

I, GORDON TAYLOR,

of 67 Erinbank Crescent, Westmeadows 3049, Victoria, Australia,

hereby apply for the grant of a Patent

for an invention entitled "IMPROVEMENTS IN OR RELATING TO PALLET HANDLING".

which is described in the accompanying ~~complete~~ ^{provisional} specification.

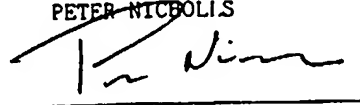
My address for service is: PETER NICHOLLS, Patent Attorney, of
Ellesmere, 5 Ardmillan Road, Moonee Ponds, Victoria 3039,
Australia.

Dated this 16th day of May, 1986.

GORDON TAYLOR

By his Patent Attorney:

PETER NICHOLLS



To The Commissioner of Patents.

APPLICATION ACCEPTED AND AMENDMENTS
ALLOWED 10.11.89

The Patents Act 1952

DECLARATION IN SUPPORT

of the (Convention) Application made by JOHN W. LAYTON

(hereinafter termed "the applicant") for a patent (in addition) for an invention entitled
IMPROVEMENTS IN TO RELATING TO PALLET HANDLING

I, Gordon Taylor
of 67 Erinbank Crescent, Westmeadows, Victoria, 3049, Australia,
do solemnly and sincerely declare as follows:

~~I am/ We are the applicant~~

~~The basic application as defined by sections 141 and 142 of the Act was/were made~~

~~1~~ ~~on~~

~~2~~ ~~on~~

~~3~~ ~~on~~

~~4~~

~~The basic application referred to in this paragraph is/are the first application made in a Convention country in respect of the invention the subject of the application.~~

I. ~~We~~ am ~~here~~

~~is/are the actual inventor of the invention and the facts upon which the applicant is/are entitled to make the application are as follows:~~

Declared at WEST MEADOWS, this 15TH day of MAY, 1987.

Signed: *L. H. Taylor*



592871

Form 10

PATENTS ACT 1952

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE

Short Title:

Int. Cl:

Application Number:
Lodged:

7312567

Complete Specification—Lodged:
Accepted:
Lapsed:
Published:

Priority:

Related Art:

This document contains the
amendments made under
Section 49.

and is correct for printing.

TO BE COMPLETED BY APPLICANT

Name of Applicant:

GORDON TAYLOR

Address of Applicant:

67 Erinbank Crescent, Westmeadows, Victoria, 3049,
Australia.

Actual Inventor:

AS ABOVE

Address for Service:

PETER NICHOLLS, Patent Attorney, Ellesmere,
5 Ardmillan Road, Moonee Ponds, Victoria 3039, Australia.Complete Specification for the invention entitled: "IMPROVEMENTS IN OR RELATING TO PALLET
HANDLING"The following statement is a full description of this invention, including the best method of performing it known
to me:—

* Note: The description is to be typed in double spacing, pica type face, in an area not exceeding 250 mm in depth and 160 mm in
width, on tough white paper of good quality and it is to be inserted inside this form.

This invention relates to the handling of pallets and suchlike objects and is particularly concerned with the straightening or tidying of a pile of pallets conventionally stacked in a skew, awry or generally higgeldy-piggledy fashion such as on the tray of a truck loader or the like.

In the past, pallets stacked in a skew-wise or other irregular fashion have usually been adjusted manually, usually individually by means of a bar or the like. This can be a clumsy and difficult, not to say time-consuming, operation. The pushing of one pallet will often shift others out of line, particularly those immediately above and below it, and two or more men are usually required if the job is to be accomplished within a reasonable time.

An object of the invention is to rationalize and simplify the task of tidying an irregularly-stacked pile of pallets and to render the amenable to one operator.

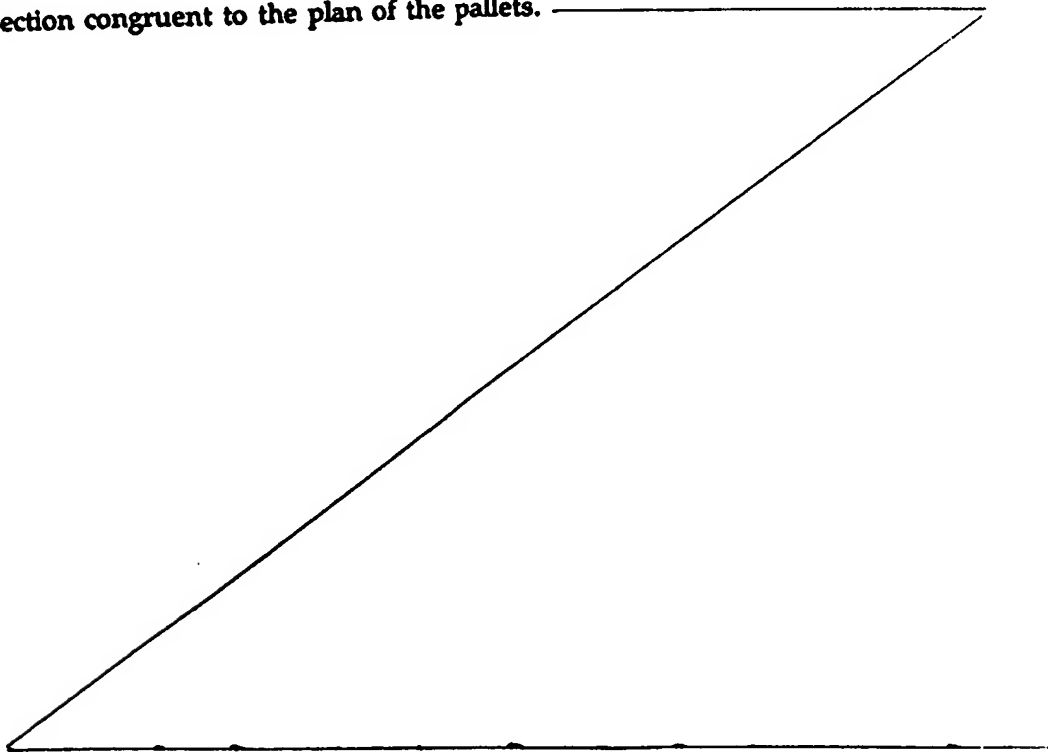
The above and other objects and advantages will become apparent hereinafter.

~~According to the invention in one preferred form~~
thereof, a device for receiving and straightening a stack of pallets or similar items or objects of substantially identical square or rectangular plan, is a generally rectangular frame or structure of plan section substantially corresponding to or slightly larger than the dimensions of a standard pallet. The device may include two side plates or walls, held in transversely spaced relationship at a distance which at minimum is slightly greater than the width



According to the invention in one preferred form thereof, a pallet handling device for receiving and straightening a stack of pallets or similar flat, substantially rigid objects substantially congruent in plan, comprises a generally rectangular frame or structure of plan section substantially corresponding to that of the pallet, the device having a back and two side walls, at least one of the latter being hinged for outward swinging movement from a normal position to define with the other wall an open mouth of variable rearward convergence, said walls being effective, vis-a-vis the stack, to push awry pallets into alignment with others and thereby to straighten the stack, as herein defined.

For the purpose of this specification, to "straighten" a stack of pallets or similar objects is to effect such adjustment of their relative positions as is required to bring their edges "into line", that is to say, to contain the objects within an imaginary right prism of height equal to that of the stack and of cross-section congruent to the plan of the pallets.




of the objects, a back, floor and an open front and top.
The walls or plates are relatively movable and rotatable
to a limited extent about an axis parallel to each, so that
the walls define between them a space of generally quadri-
5 lateral section. Thus the back, floor and one side wall
may be fixed together in substantially rigid formation and
the other side wall may be pivoted where it joins the back
for limited outward swinging movement from a "normal" or
minimum position in which it is parallel to the other side
10 wall and the section space corresponds substantially to
the plan form of the pallets. The movable wall may be swung
to and away from the normal position by an hydraulic ram
pivoted to suitable brackets or links associated with the
movable wall, so that the aforesaid section space expands
15 into a trapezium-like form. The ram may be powered by an
electric "power-pack" of a kind known per se.

But in order that the invention may be better
understood, reference will now be made to the accompanying
drawings which are to be considered as part of this specifi-
20 cation and read herewith. In the drawings:

Figure 1 is a front perspective view of a pallet-
straightening device according to a practical embodiment
of the invention;

Figure 2 is a rear perspective view of the device
25 of Fig. 1, and

Figure 3 is a plan view of the device shown in
Figs. 1 and 2.



Referring to the drawings in more detail there is shown a pallet-straightening device in the form of a generally rectangular frame or structure of plan section (Fig. 3) corresponding to or slightly larger than the dimensions of a standard pallet (not shown). The device has side walls 4 and 5, a back 6, a floor 7 and an open front and top. Wall 5, back 6 and floor 7 are fixed together in substantially rigid formation, and wall 4 is pivoted at 8 to 6 for limited outward swinging movement from the normal position shown to the position indicated by the dotted lines in Fig. 3. Hydraulic rams 9, 9' are pivoted at 10, 10' respectively to the rear of back wall 6 and their piston rods are themselves respectively pivoted to the rear ends of arms 11, 12 rigidly associated with the outside of wall 4. Rams 8, 9 may be powered by an electric "power-pak" of a kind known per se, and/or they may have associated respectively therewith hydraulic lines 13, 14 in which the required positive or negative pressure is established by pump 15, operated by a three-phase electric motor 16, through a valve bank 17 with which is associated remote control 18.

In use, wall 4 may be moved into a suitably "wide" position such as shown by the dotted lines in Fig. 3 and a truck, loader or the like carrying a stack of pallets to be straightened is backed or otherwise manoeuvred into a position in which the stack is positioned between walls 4 and 5. Because wall 4 is swung outwards, walls 4, 5 together define a rearwardly-converging "mouth" or gate


which, during this preliminary positioning operation, tends to centralize any pallets that are seriously awry laterally of the desired stack configuration, while the back wall 6 tends to centralize any that project rearwardly from the
5 desired configuration.

After completion of this operation, hinged side 4 is forced "shut" i.e. into its normal position, thereby effecting a fine and final adjustment by shifting into line
10 any pallets that are still askew. In the result, all pallets will be stacked in a horizontal section substantially corresponding to the plan section of the device when the movable wall is shut.

The device may be provided with fork-lift engagement means or the like, so that in addition to being merely a
15 stack-straightener, it can be used for carrying the tidied stack to a desired destination.

If desired, both side walls 4, 5 may be hinged for outward swinging movement. Clearly this will provide a wider gate, for dealing with seriously awry stacks. The
20 walls could be arranged to swing either in unison or singly.

As an alternative to the original stack being moved into the device, a device as provided by my invention may be brought to the stack. Clearly, some modifications may be required. For example a floor will, in general,
25 be unnecessary and unworkable in such a device, which may consist essentially of a single pair of spaced, relatively movable walls functioning as mechanical "hands". The device



may be moved by a fork-lift truck or any other suitable means 19.

It will be evident from the foregoing that my
pallet straightener is simple in construction and use and
5 renders the operation essentially a one-man job.

For the purpose of this specification terms such
as "side", "back", "floor", "front", "top" and "horizontal"
are to be understood as referring to the invention in
operation and not as necessarily limiting. _____

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The claims defining the invention are as follows:

1. A pallet handling device for receiving and straightening a stack of pallets or similar flat, substantially rigid objects substantially congruent in plan, comprising a generally rectangular frame or structure of plan section substantially corresponding to that of the pallet, the device having a back and two side walls, at least one of the latter being hinged for outward swinging movement from a normal position to define with the other wall an open mouth of variable rearward convergence, said walls being effective, vis-a-vis the stack, to push awry pallets into alignment with others and thereby to straighten the stack, as herein defined.
2. A pallet handling device for straightening an askew or awry stack of pallets or similar flat, substantially rigid objects of substantially identical square or rectangular plan, comprising a frame holding a pair of flat walls or plates in transversely spaced relationship at a distance which at minimum is slightly greater than the width of the objects, said plates being relatively movable and rotatable to a limited extent about an axis parallel to each so that the plates define between them a space of generally quadrilateral section which at minimum, in a normal position of the plates, corresponds substantially to the plan form of the objects, but which is expandible into a trapezium-like area sufficient to receive the skew stack, means for moving the frame and stack relatively to each other so that the stack is received between the plates, and means for moving the plates from an expanded to said normal position, thereby pushing awry pallets relative to others to effect such positional and rotational adjustments as are required to centralize the skew objects and bring the stack into a tidy condition.
3. A pallet or like straightening device substantially as herein described with reference to the accompanying drawings.

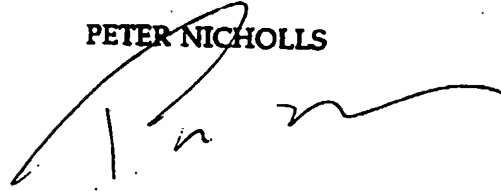


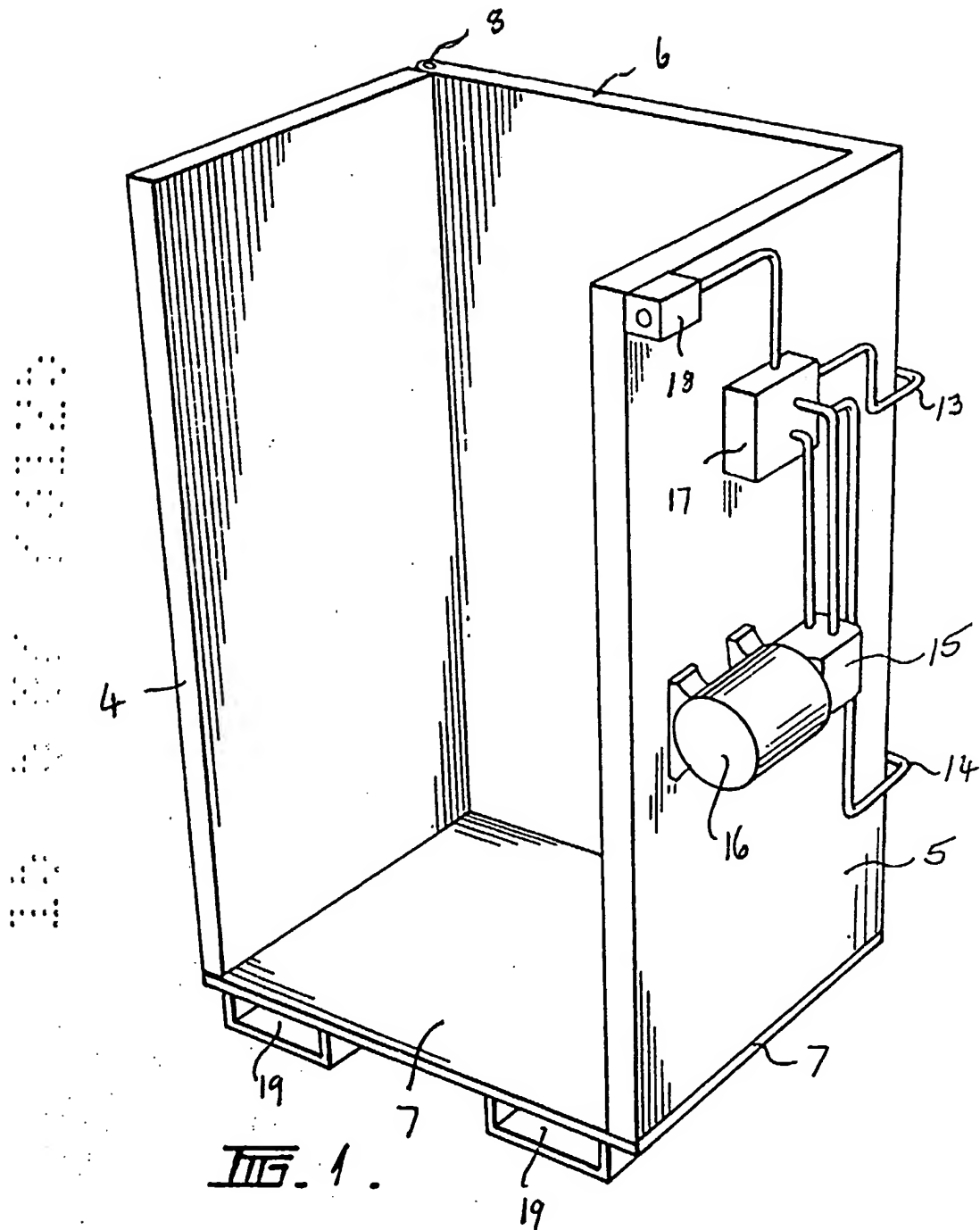
DATED this 12th day of October, 1989.

GORDON TAYLOR

By his Patent Attorney:

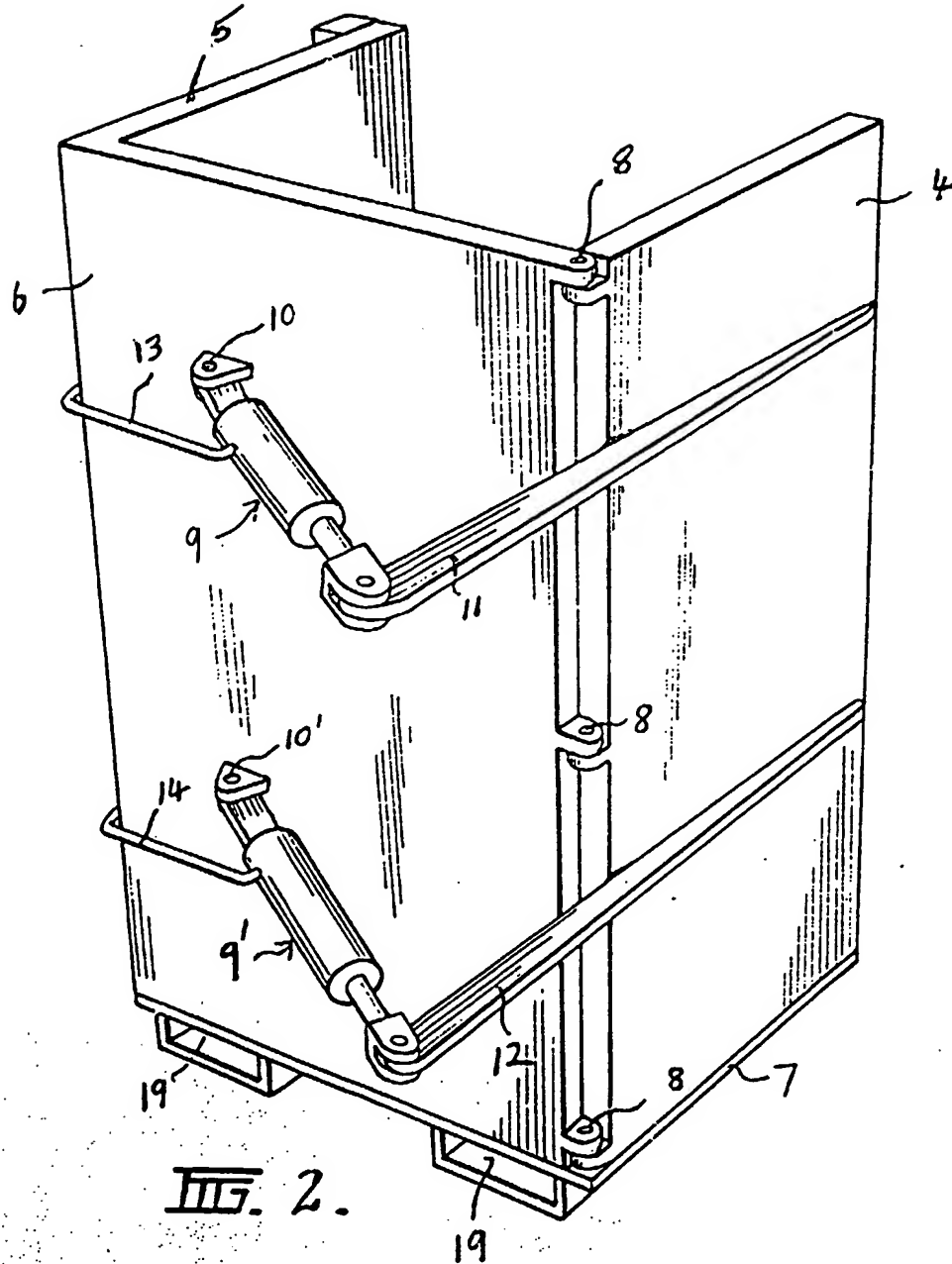
PETER NICHOLLS

A handwritten signature in black ink, appearing to read 'Peter Nicholls', written over the printed name.



73/25/87

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